

PATENT ABSTRACTS OF JAPAN

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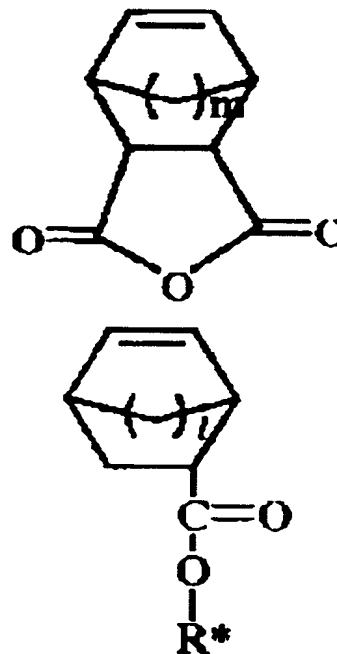
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(54) PHOTORESIST MONOMER, PHOTORESIST COPOLYMER AND PREPARATION THEREOF, PHOTORESIST COMPOSITION, PHOTORESIST PATTERN FORMATION METHOD, AND SEMICONDUCTOR DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a photoresist monomer having etching resistance, heat resistance, capability to adhere to substrates, photosensitivity, and solubility in a normal alkali developing soln. by using a compd. having a norbornene or bicyclooctoene structure.

SOLUTION: A compd. of formula I (wherein m is 1 or 2) is used in the form of copolymer contg. the compd. of formula I and a compd. of formula I (wherein R* is an acid-sensitive protective group; and l is 1 or 2). Normally, t-butyl, 2-tetrahydrofuran, 2-tetrahydropyran, ethoxyethyl, and t-butoxyethyl groups are listed as the acid-sensitive protective group R*. The copolymer is obtd. by the polymn. using a polymn. initiator or a metal catalyst. In the case of polymn. using a polymn. initiator, further addition of a comonomer (e.g. maleic anhydride or a maleimide deriv.) capable of accelerating the polymn. is pref. The mol.wt. of the copolymer is pref. 3,000-100,000.





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- Photoresist monomer for photorelaser composition used in semiconductor device manufacture by optical lithography, comprise a norbornene dicarboxylic anhydride-type compound
- AB - JP2000080124 NOVELTY - A photoresist monomer comprises a norbornene dicarboxylic anhydride-type compound.
- DETAILED DESCRIPTION - A photoresist monomer of formula (I) comprises a norbornene dicarboxylic anhydride-type compound.
- $m = 1$ or 2 .
- INDEPENDENT CLAIMS are also included for the following:
- (i) the manufacture of a photoresist copolymer, where photoresist monomers of formula (I) and formula (II) and maleic anhydride and/or maleimide derivative are dissolved in an organic solvent (A) and polymerization initiator is added to the resultant solution;
- (ii) a photoresist composition comprising a photoresist copolymer as above, a photooxidant generator and an organic solvent (B); and
- (iii) formation of a photoresist pattern by coating a photoresist composition as above on a semiconductor substrate to form a photoresist film and exposing and developing the film to form a pattern.
- R asterisk = acid sensitive protective group, preferably t-butyl, 2-tetrahydrofuran, 2-tetrahydropyran, ethoxy ethyl or t-butoxy ethyl; and
- $l = 1$ or 2 .
- USE - For semiconductor devices (claimed). The photoresist is used to manufacture highly integrated semiconductor devices by optical photolithography.
- ADVANTAGE - The photoresist monomer is etching resistant, heat resistant, optically sensitive and adheres strongly to the substrate. The photoresist copolymer can be exposed with ultrashort wavelength of 250 nm or less. The photoresist can be developed with existing alkali developer.
- (Dwg.0/0)
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- PA - (HYUN-N) HYUNDAI ELECTRONICS IND CO LTD
- IN - NOH C H; CHUNG J C
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- ===== PAJ =====
- TI - PHOTORESIST MONOMER, PHOTORESIST COPOLYMER AND PREPARATION THEREOF, PHOTORESIST COMPOSITION, PHOTORESIST PATTERN FORMATION METHOD, AND SEMICONDUCTOR DEVICE
- AB - PROBLEM TO BE SOLVED: To obtain a photoresist monomer having etching resistance, heat resistance, capability to adhere to substrates, photosensitivity, and solubility in a normal alkali developing soln. by using a compd. having a norbornene or bicyclooctoene structure.
- SOLUTION: A compd. of formula I (wherein m is 1 or 2) is used in the form of copolymer contg. the compd. of formula I and a compd. of formula I (wherein R^* is an acid-sensitive protective group; and l is 1 or 2). Normally, t-butyl, 2-tetrahydrofuran, 2-tetrahydropyran, ethoxyethyl, and t-butoxyethyl groups are listed as the acid-sensitive protective group R^* . The copolymer is obtd. by the polymn. using a polymn. initiator or a metal catalyst. In the case of polymn. using a polymn. initiator, further addition of a comonomer (e.g. maleic anhydride or a maleimide deriv.) capable of accelerating the polymn. is pref. The mol. wt. of the copolymer is pref. 3,000-100,000.
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- PA - HYUNDAI ELECTRONICS IND CO LTD
- IN - ROH CHI HYEONG;JUNG JAE CHANG
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